REMARKS

Upon entry of the instant Response and Amendment, Claims 1-12 will be pending in the instant application.

In the Office Action mailed February 22, 2006, Claims 1-11 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 3,346,529 issued to Peters, U.S. Pat. No. 3,807,703 issued to Day, U.S. Pat. No. 5,100,699 issued to Roeser, U.S. Pat. No. 3,319,937 issued to Wilson et al., U.S. Pat. No. 3,051,455 issued to Magester and U.S. Pat. No. 3,881,871 issued to Porter. The Examiner made those rejections FINAL. Applicants are filing the instant Response under 37 C.F.R. §1.114 to remove the finality of those rejections and reopen prosecution.

Rejections under 35 U.S.C. §103(a)

Claims 1-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 3,346,529 issued to Peters, U.S. Pat. No. 3,807,703 issued to Day, U.S. Pat. No. 5,100,699 issued to Roeser, U.S. Pat. No. 3,319,937 issued to Wilson et al., U.S. Pat. No. 3,051,455 issued to Magester and U.S. Pat. No. 3,881,871 issued to Porter. Applicants respectfully disagree with the Examiner's contention regarding the combined teaching of the cited references.

As stated in MPEP §2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion or motivation to do so found either in the references themselves of in the knowledge generally available to one of ordinary skill in the art, citing *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). Clearly there is no such teaching, suggestion or motivation shown in the references in this case.

Of the cited art, only U.S. Pat. No. 3,319,937 issued to Wilson et al., addresses the issue of controlling the cell size of a foamed material. Wilson et al., at col. 4, lines 72-73, teach a preferred pressure in the mixing zone of between 10 to 15 psi (0.7 to 1 bar). Additionally Wilson et al. use a valve at the outlet of the mixer in order to adjust the desired pressure inside of the mixing chamber.

However, Wilson et al. do not describe the use of a stirrer with inclined blades and fail to address the problem of an increasing pressure in the mixing zone as a consequence of an increasing rotational stirrer speed, nor do they provide any teaching or suggestion to one of ordinary skill in the art as to how to solve the problem. It is well established that a reference which does not recognize a problem can not suggest a solution. *In re Shaffer*, 108 USPQ 326 (CCPA 1956). Wilson et al. state at col. 4, lines 66-69, that ,"... with higher mixing speeds the average pores in the foam will be quite fine whereas with a decrease in such mixing speed, said pores become coarse and of increased average size".

It is, however, well-known today that the pressure in the mixing chamber is an important parameter with regard to cell size (as described in U.S. Pat. No. 5,296,517, listed on form PTO-1449 submitted upon filing of the instant application). There is a conflict between the adjustability of a low pressure and a high rotational stirrer speed in modern plants with high throughput of material up to more than 500 kg/min, and the demand for rather low residence time of the reactive mixture inside the mixing zone, because some mixtures start to gel after a few seconds.

The process described by Wilson et al. would not work with very reactive systems (which start to react after a few seconds), because Wilson et al. suggest a permissible time interval between the introduction of the last liquid component into the head and the ejection of the mixed components the from outlet nozzle between 10 to 20 seconds (at col. 4, lines 42-43). As a consequence of this very long residence time inside the mixer, the mixer must be designed to be long enough to have good mixing at moderate rotational stirrer speed of 1,500 to 3,000 rpm (at col. 4, lines 64-65). Modern mixers often run at a rotational speed of up to 6,000 rpm, which produces a very strong effect on the pressure in the mixing chamber.

None of the other cited references, alone or in combination, teach or suggest a process for the control of the cell size in the production of foamed material. Additionally, none of those references mention the possibility of reducing the pressure in the mixing chamber at high rotational stirrer speeds by using a stirrer with inclined blades.

Day, in U.S. Pat. No. 3,807,703, uses a stirrer with inclined blades, but fails to describe the effect of the pressure inside the mixing chamber on the cell size of the foamed material. Porter, in U.S. Pat. No. 3,881,871, describes the use of a valve at the outlet of the mixing zone, but does not mention any relationship between pressure and cell size.

The competing objectives of having proper mixing (which requires high rotational speed), high output (which causes relatively high pressure drop flowing through the mixing chamber), a small residence time (which requires a small mixer volume, increasing the problem of pressure drop of the high amount flowing through the mixing chamber), and a low pressure in the mixing zone are not addressed in any of the cited references. The inventive method solves this complex problem. And although it is known to manipulate the flow rate through a mixer by changing the rotational speed, if the mixer is fed by a free reservoir, this would not teach or suggest to one of ordinary skill in the art the use of a stirrer with inclined blades to reduce pressure inside the mixing chamber at increasing rotational speed of the stirrer when the components are fed to the mixing chamber in a metered manner by pumps.

In the instantly claimed method, the volume flow through the mixer is set only by the metering pumps. Thus, variations in the stirrer rotational speed cause variations of the pressure in the mixing zone and the pressure in the mixing zone may be adjusted exactly by setting the rotational speed of the stirrer (at a constant throttle adjustment) as well as by setting the throttle (at a constant rotational speed of the stirrer) or by combined settings (page 6, lines 26-32 of the instant specification). It is known in the art that the pressure in the mixing chamber has a great influence on foam properties (page 2, lines 22-27 of the instant specification). Thus, the instantly claimed method produces a polyurethane foam having adjustable and improved properties.

Therefore, Applicants contend that nothing in the combined teaching of the cited art would lead one of ordinary skill in the art to the instantly claimed invention and respectfully request the Examiner reconsider and reverse his rejection of Claims 1-11 under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 3,346,529

issued to Peters, U.S. Pat. No. 3,807,703 issued to Day, U.S. Pat. No. 5,100,699 issued to Roeser, U.S. Pat. No. 3,319,937 issued to Wilson et al., U.S. Pat. No. 3,051,455 issued to Magester and U.S. Pat. No. 3,881,871 issued to Porter.

CONCLUSION

Applicants have amended Claim 1 and added Claim 12. Such claim amendments add no new matter and find support in the specification.

Applicants submit that the instant application is in condition for allowance. Accordingly, reconsideration and a Notice of Allowance are respectfully requested for Claims 1-12. If the Examiner is of the opinion that the instant application is in condition for other than allowance, he is requested to contact the Applicants' Attorney at the telephone number listed below, so that additional changes to the claims may be discussed.

Respectfully submitted,

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